

# An Estimate of the Volume of Wholesale Trade in the United States, 1899-1935

By N. H. Eagle, Assistant Director, Bureau of Foreign and Domestic Commerce<sup>1</sup>

IT is well known that there is very little data available on the extent of the wholesale trade of the United States before the year 1929, when the first census of wholesaling was taken. Since that time, a second complete canvass of the United States was made for the year 1933 and a third is now in process by the Census Bureau covering the year 1935. The outstanding importance of wholesaling as a part of the national economy was not generally realized until the census revealed the vast extent of this phase of distribution. The experience of the N. R. A. has further served to focus attention upon that part of the wholesale structure which sought codification. Because of the increased interest generated in wholesaling by these occurrences, data have been sought on the extent of wholesaling prior to the census of 1929.

In order to avoid misunderstanding, a word of caution on the concept of wholesaling used in this article is in order. By wholesaling is meant the volume of marketing transactions in which the buyer is actuated entirely by a desire to make a profit from the use or resale of the goods purchased. This is in contrast with retail purchases which include only those transactions in which the buyer is purchasing for his own or his family's use. The total volume of goods marketed at wholesale which the author attempts to measure in this article should not be confused with the total volume of wholesale trade as measured by the Census Bureau since the latter includes much duplication and is restricted to specialized wholesaling establishments. It should not again be confused with the very narrow view of wholesaling which confuses wholesaling with the activities of wholesalers. It is this concept of wholesaling which is measured by the annual estimates prepared by the Marketing Research Division of the Bureau of Foreign and Domestic Commerce for wholesalers proper.

In this article the attempt is made to measure the total volume of goods marketed at wholesale at the point of production or importation or just as they enter the portals of the distribution process. Included in this concept of wholesaling are the activities of all producers or importers as they initiate the flow of merchandise through the marketing channels. Such transactions are consistently recognized as wholesaling transactions in the compilation of wholesale price indexes which are based upon price quotations of producers. This is, moreover, about the only point at

which a measure of the total volume of goods marketed at wholesale can be given on a comparable basis with a minimum of duplication. As the goods flow through the wholesaling process the number of transactions are multiplied and transportation and distribution costs are incurred until the volume of wholesaling transactions or turnover reaches imposing proportions.

The author has evolved a method which is the outgrowth of a related technic which he worked out some years ago for the Brookings Institution. The basic assumption is that, since all but a negligible volume of the goods produced and imported into the United States first enter the distribution stage of production through wholesale channels,<sup>2</sup> a measure of the total volume of such production and importation actually provides a sound basis for determining the volume of nascent wholesale trade. Moreover, this is a measure which is available for a number of years prior to 1929. Indeed, there are indexes of the aggregate value of production extending back to the turn of the century. Notable among these is one prepared by Prof. F. C. Mills, of Columbia University, which appeared in his publication "Economic Tendencies in the United States", published in 1932 by the National Bureau of Economic Research. None of these indexes proved to be adequate for this purpose, however, since they failed to correspond closely with the more complete data already available for census years.

## Computation of Aggregate Value of Production.

A corrected index was therefore devised, which drew upon existing indexes for intercensal periods but adjusted them to a series of relatives by use of a method of interpolation. Table 1 indicates the method of computing relatives for the census years between 1899 and 1935. The actual dollar values for manufactures, agricultural production, and mineral products were utilized for this purpose since they comprise some 98 percent of normal total production in the United States. The year 1929 was selected as a base for reasons which will appear from the discussion. The aggregate value relatives from table 1 are utilized as the framework for the revised index (see table 2). Since they cover only census years there are a number of gaps, first of 4 years' duration between 1899 and 1919, and thereafter of 1 year each. These relatives were next compared with Professor Mills' index, the three sections of which were first spliced and then converted to a comparable 1929

<sup>1</sup> Frederick M. Come, of the Division of Economic Research, assisted in working out the method of interpolation used and in computing the data in the tables.

<sup>2</sup> Approximately 97 percent of the value of produced and imported goods flowed through wholesale channels in 1929 and 1933, according to the best estimates available.

basis. Notable discrepancies were observed between the relatives and the index for the census years, especially for the early years of the century. A comparison with a similar unpublished index by Dr. Clark Warburton indicated the same condition. Both Professor Mills' and Dr. Warburton's indexes showed fairly close correspondence in the direction and annual rate of change. It was therefore decided that the census relatives might be used as guides in the construction of a new index based upon that of Professor Mills but utilizing his only as a basis for estimating the annual, intercensal direction of change, the rate of change being revised by the methodology indicated in table 2.

Table 1.—Value of Products of Agriculture, Manufactures, and Mining in the United States, 1899-1935

Year	Aggregate value of products of United States industry <sup>1</sup> (millions of dollars)	Aggregate value relatives, 1929=100	Year	Aggregate value of products of United States industry <sup>1</sup> (millions of dollars)	Aggregate value relatives, 1929=100
1899	14,772	17.0	1923	77,288	57.0
1904	20,414	22.1	1926	90,300	61.0
1909	28,787	32.6	1927	79,904	54.6
1914	33,127	37.5	1928	88,263	60.0
1919	34,978	39.7	1931	81,488	55.2
1921	34,719	39.4	1932	40,285	28.7

<sup>1</sup> Value of products of manufactures for the years 1899-1920, inclusive, is from the Census of Manufactures: 1929 "Statistics for Industries and States", p. 2. The figure for 1931 is from the preliminary release of the Census of Manufactures for 1931, issued January 25, 1935, by the Bureau of the Census. About 800 million dollars have been added to the value of manufactures as reported to allow for the industries suppressed in 1929, but not in 1931.

The value of farm products is exclusive of crops fed to livestock and represents the gross income from farm production taken from the "Statistical Abstract of the United States", 1931, p. 695, for 1929 and 1934. The figures for all other years are taken from the July 1935 issue of "Crops and Markets", p. 220, of the Department of Agriculture. The value of mineral products for the years 1899 through 1931 is taken from "Mineral Resources of the United States", 1931, part I, p. A-11, and the figure for 1932 is taken from the "Minerals Yearbook", 1932, p. 14.

In this method the change in Professor Mills' index for the intercensal period is compared with that in the census relatives. If the rate of change in Professor Mills' index differs from that in the census relatives, it is assumed that this error is the cumulated result of a number of equal percentage errors. Thus, from 1899 to 1904, it is found that the percentage change in Professor Mills' index is greater than that in the census relatives. Consequently, it is assumed that the corrections to be used are those given in column 7. Column 8 then represents the adjusted percentage change in Professor Mills' index for the intermediate years. These percentages are then applied to the census figure for 1899 to obtain the revised aggregate value index (column 9). The same procedure was followed for each intercensal period. This gave a revised aggregate value index for goods produced in the United States and a much stronger and more accurate index because of the tying in, at each census year, with the actual aggregate value relatives.

The next step was to estimate the dollar volume of goods produced in the United States for the entire period. The 1929 Census of Manufactures and Distribution made it possible to refine the data on aggregate

value of products for that year, and thus to correct the totals for all years, using the 1929 figure as a base. The following tabulation (table 3) gives the refined figure of \$78,976,202,000. A similar estimate for 1932, based on the Census of American Business and the 1929 ratios, gives a corresponding figure of \$37,085,597,000.

Table 2.—Method of Interpolation Used to Compute Aggregate Value Index

Year	1	2	3	4	5	6	7	8	9
	1899 aggregate value index	Actual aggregate value relatives	Changes in column 1, each census year=100	Intercensal changes in column (3)	Column (4) × column (5) × 100	Percentage deviation (cumulative)	Correction index=100+	Adjusted interdecadal changes for Mills index	Revised aggregate value index
1899	128.6	17.9	100.0			0	100.0	100.0	17.9
1900	129.3		103.3			-1.6	98.4	107.2	19.3
1901	122.5		109.3			-3.0	95.4	100.5	19.1
1902	127.9		126.1			-4.6	90.8	120.0	33.3
1903	127.9		126.1			-6.0	84.0	127.8	32.9
1904	128.6	22.1	129.5	129.1	92.8	-7.6	76.5	129.1	32.1
1906	131.7		110.5			1.8	101.6	112.6	25.0
1908	124.4		120.3			3.2	103.2	124.1	28.7
1909	125.6		124.5			4.7	104.7	133.4	30.1
1910	124.4		113.3			6.3	100.3	120.4	27.8
1919	127.4	32.0	130.8	141.1	107.9	7.9	107.9	141.1	32.6
1920	128.6		128.3			-5.8	94.4	107.7	35.1
1921	126.7		98.1			-1.2	98.8	98.9	21.6
1922	114.6		119.3			-1.7	98.8	117.3	38.2
1923	114.6		118.4			-2.8	97.7	116.7	37.7
1924	114.6	37.5	118.4	115.0	97.1	-2.9	97.1	116.9	37.5
1925	114.6		118.0			1.3	101.3	117.5	44.1
1926	104.8		160.1			2.8	102.0	164.9	57.8
1927	99.2		214.9			3.9	103.0	223.3	57.6
1928	100.0		239.1			5.2	103.2	231.6	54.3
1929	106.0	54.7	237.0	222.5	106.8	6.5	106.5	233.4	54.7
1930	124.5		115.0			4.8	104.3	128.7	117.1
1931	96.8	64.8	62.5	67.9	108.0	8.6	108.6	67.9	64.8
1932	78.5		115.5			1.0	101.8	119.7	75.0
1933	87.9	57.9	134.0	130.7	102.0	2.0	102.0	130.7	57.9
1934	84.1		95.7			-2.0	98.0	93.8	52.5
1935	94.8	91.0	107.8	103.5	99.0	-4.0	95.0	103.5	91.0
1929	97.0		102.3			1.5	101.5	103.9	94.5
1927	91.7	60.3	95.7			2.9	102.0	90.6	60.3
1928	97.8		108.7			4.0	103.0	107.9	97.1
1929	100.0	100.0	109.1	110.5	101.5	1.5	101.5	110.5	100.0
1930	100.0		80.3			-2.4	97.6	78.4	78.4
1931	81.2	58.5	61.2	58.5	98.3	-4.7	93.6	58.5	58.5
1932	48.7		75.7			-1.8	98.9	73.8	48.0
1933	49.2	58.7	58.4	75.4	97.5	-2.5	97.0	75.4	48.7
1934	57.4								57.4
1935	57.0								57.0

<sup>1</sup> Figures for 1899 and 1900 estimated by comparison with an unpublished index prepared by Clark Warburton.

<sup>2</sup> Figures for 1930 to 1935 inclusive are from Bulletin No. 58, of Nov. 15, 1935, at National Bureau of Economic Research. Aggregate value index for these years computed by applying Bureau of Labor Statistics wholesale price index to index of physical volume of production therein obtained. Figures may not be exactly comparable with those for 1901 to 1929.

<sup>3</sup> Preliminary.

#### Estimate of Value of Goods Marketed at Wholesale.

The aggregate value of goods produced for the years 1899-1935 was then computed by use of the index and the refined figure for 1929 (see table 4). To these value figures were added the value of imports for consumption, for which data were available from the Bureau of Foreign and Domestic Commerce. The result was the estimated total value of goods marketed at wholesale for the years 1899-1935. These figures were then reduced to relatives on the basis of 1929=100. They afford a reasonably good index of the value of goods marketed at wholesale since 1899 and indicate the changes which have taken place over this period of 36 years. Since price changes influence value figures, the

value index has been reduced through the use of a wholesale price index to a crude index of physical volume of goods marketed at wholesale.

Table 3.—Total Value of Goods Produced in the United States, 1929  
(In thousands)

Items	Amount
Gross value of manufactured goods.....	\$ 909,900,810
Less receipts from contract work, services, and interplant transfers.....	\$ 7,579,707
Net value of manufactured goods distributed by manufacturers.....	\$2,453,243
Value of goods manufactured:	
(a) By wholesale establishments.....	\$ 1,183,023
(b) By retail establishments.....	\$ 1,316,279
Total value of manufactured goods distributed.....	\$3,920,445
Agricultural production (cash income).....	\$ 18,146,730
Value of products of mines and quarries.....	\$ 2,292,829
Value of crude petroleum production.....	\$ 1,250,417
Value of forest products (not manufactured).....	\$ 1,100,800
Value of fishery products (not manufactured).....	\$ 100,670
Value of products of hunting and fishing.....	\$ 20,000
Total value of goods produced in the United States for sale.....	\$8,976,203

<sup>1</sup> Census of Manufactures, U. S. Bureau of the Census.

<sup>2</sup> For the year 1929 data were collected by the Census of Manufactures showing that \$3,942,014,000 consisted of receipts from contract and repair work, \$2,325,793,000 represented interplant transfers, and \$1,001,960,000 were in the form of receipts from service industries. For 1933 the amounts for these items were obtained by applying reported ratios as of 1929 to the value of products by industries for 1933. To the 1933 figure has been added the value of motion-picture production in order to make the data comparable with 1929. Thus, the estimated receipts from contract and repair work for 1933 were \$1,783,000,000, for interplant transfers the figure was \$917,000,000, and for receipts from service industries the amount was \$869,000,000.

<sup>3</sup> For 1929 the data are given in the Census of Wholesale Distribution. The 1933 figure was obtained by applying the percent decrease, 1929-33, in value of products reported by the Census of Manufactures, to the reported amount of goods manufactured in wholesale establishments during 1929.

<sup>4</sup> For 1929 the data are given in the Census of Retail Distribution. The 1933 figure was obtained by applying the percent decrease, 1929-33, in value of products reported by the Census of Manufactures, to the reported amount of goods manufactured in wholesale establishments during 1929.

<sup>5</sup> Yearbook of Agriculture, 1931, p. 677.

<sup>6</sup> Census of Mines and Quarries, Bureau of the Census.

<sup>7</sup> Bureau of Mines, Department of Interior.

<sup>8</sup> Census of Manufactures, Bureau of the Census.

<sup>9</sup> Bureau of Fisheries, Department of Commerce.

<sup>10</sup> Fifteenth Census of the United States, 1930, Distribution, vol. II, U. S. Department of Commerce, Bureau of the Census, table 1, p. 4.

#### Trend of Wholesale Trade, 1899-1935.

It is interesting to note that the total volume of goods in value terms amounted to approximately 15 billion dollars in 1899 and remained fairly constant at 16 billion dollars for the next 2 years. There was a fairly gradual increase to 25 billion dollars in 1907, with a recession indicated in 1908 resulting no doubt from the financial panic of 1907. The year 1909 saw the resumption of the upward trend of wholesale trade which continued with few interruptions to a maximum of approximately 98 billion dollars in 1920, which marked the culmination of the postwar boom. There was a sharp decline to less than 54 billion dollars in 1921, after which there was a steady increase to nearly 84 billion dollars in 1929. The great depression reduced the volume of wholesale trade to 35½ billion dollars in 1932, the lowest point which had been reached since 1915. There was a slight recovery in 1933 and a very substantial recovery in 1934 and 1935; in the latter year the estimated volume was nearly 56 billion dollars.

In interpreting these value figures a note of caution must be sounded. Much of the fluctuation is due, not to changes in the volume of wholesale trade, but to changes in the level of wholesale prices. When allowance is made for price changes the flow of wholesale trade over the period covered is much steadier. From about one-third of the 1929 volume at the turn of the

Table 4.—Estimated Aggregate Value and Physical Volume of Goods Marketed at Wholesale in the United States, 1899-1935

Year	1	2	3	4	5	6	7
	Aggregate value index (1929=100)	Aggregate value of domestic production (millions of dollars)	Imports for consumption including duties paid (millions of dollars)	Total value of goods marketed at wholesale (2+3+4)	Index of value of goods marketed at wholesale (1929=100)	Index of wholesale prices (1929=100)	Index of physical volume of goods marketed at wholesale (1929=100)
1899	17.9	14,137	888	15,025	17.9	54.8	32.7
1900	18.2	15,173	1,090	16,263	19.3	55.9	32.3
1901	18.1	15,064	1,042	16,106	19.2	56.0	32.1
1902	22.8	18,401	1,151	19,552	23.3	51.3	37.7
1903	22.9	18,066	1,229	19,295	23.1	42.5	37.8
1904	23.1	18,243	1,360	19,603	23.2	52.8	37.1
1905	26.0	20,534	1,345	21,879	36.1	43.1	41.4
1906	26.7	22,060	1,807	23,867	38.5	44.3	41.4
1907	30.1	23,772	1,744	25,516	50.4	44.4	42.8
1908	27.8	21,068	1,453	22,521	37.9	46.0	42.8
1909	32.0	23,745	1,677	25,422	52.0	46.0	46.0
1910	35.1	27,321	1,974	29,295	59.0	47.6	47.6
1911	31.6	24,968	1,632	26,600	51.9	48.1	48.1
1912	32.2	20,180	1,848	22,028	38.3	52.3	52.3
1913	37.7	28,774	2,058	30,832	58.0	51.9	51.9
1914	37.6	28,618	2,190	30,806	57.9	71.5	63.0
1915	44.1	34,825	1,975	36,800	63.9	72.9	60.2
1916	47.8	43,848	2,573	46,421	67.5	69.7	64.1
1917	47.6	69,104	3,124	72,228	68.1	72.3	69.5
1918	44.3	74,474	3,123	77,597	62.6	157.8	67.1
1919	94.7	74,780	4,048	78,828	94.0	145.4	84.8
1920	117.1	82,480	4,222	86,702	118.7	162.0	88.9
1921	64.3	60,783	2,845	63,628	63.9	102.4	62.4
1922	78.0	60,233	3,625	63,858	71.8	101.5	73.7
1923	87.9	80,420	4,298	84,718	87.9	108.8	83.2
1924	82.8	88,146	4,167	92,313	82.8	102.0	80.3
1925	91.0	71,868	4,728	76,596	91.3	106.6	84.1
1926	94.6	74,032	4,898	78,930	94.9	104.0	80.6
1927	90.6	71,473	4,723	76,196	90.5	104.1	80.7
1928	97.1	76,625	4,625	81,250	98.8	101.8	86.5
1929	100.0	78,970	4,934	83,904	100.0	100.0	100.0
1930	78.4	61,917	3,678	65,595	78.1	90.7	86.1
1931	58.3	48,043	2,459	50,502	67.8	70.6	70.6
1932	43.0	33,803	1,384	35,187	42.4	58.0	62.4
1933	45.7	37,065	1,717	38,782	46.2	69.2	66.5
1934	67.4	45,332	1,837	47,169	68.3	78.6	71.8
1935	67.9	53,035	2,108	55,143	68.4	83.9	79.1

<sup>1</sup> See in text explanation of concept used.

<sup>2</sup> Preliminary.

<sup>3</sup> Revised estimates of annual value of domestic production calculated directly from census data.

<sup>4</sup> Preliminary imports for consumption and duties paid. Monthly summary of Foreign Commerce of the United States, December 1935.

century, slow but steady progress was made to about 53 percent in 1912 through 1914. The war period saw a substantial increase to nearly 70 percent of the 1929 level in 1917. There was a slight recession to 62.4 percent in 1921, after which there was a substantial increase to nearly 74 percent in 1922. The years of relative prosperity culminating in 1929 saw the physical volume of wholesale trade rise steadily to a peak in that year. Since then there has, of course, been a decline in the volume of wholesale trade, but it is much less in physical terms than in value. The low point was reached in 1932 at 62.4 percent of the 1929 level, whereas the value in that year was but 42.4 percent of the 1929 level. The revival since 1932, while slow, has brought the physical volume up to 79 percent of the 1929 level, or approximately the level which prevailed in 1924.

It is realized that these figures are only estimates and hence are open to the criticism of all such data. It is believed, however, that the estimates are reasonable, and that they may afford a better conception as to what has happened to the wholesale trade than has been available heretofore.